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PATENT APPLICATION

ATTORNEY DOCKET NO. 10970975 -1IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Jeffrey S Barber et al

Confirmation No.: 4585

Application No.: 09/517366

Examiner: George L. Ople

Filing Date: Mar 02, 2000

Group Art Unit: 2194

Title: System And Method For Establishing A Secure Execution Environment For A Software Process

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1460
Alexandria, VA 22313-1460TRANSMITTAL OF APPEAL BRIEFTransmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on Dec 21 2005.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) \$600.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:☐ 1st Month
\$120☐ 2nd Month
\$450☐ 3rd Month
\$1020☐ 4th Month
\$1690☐ The extension fee has already been filed in this application.☒ (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.Please charge to Deposit Account 08-2025 the sum of \$ 600. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.☐ I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to:
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Signature: 

Respectfully submitted,

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By: 

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Jeffrey S. Barber et al.	Examiner:	George L. Opie
Serial No.:	09/517,366	Group Art Unit:	2194
Filed:	March 2, 2000	Docket No.:	10970975-1
Title:	System and Method for Establishing a Secure Execution Environment for a Software Process		

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is filed in response to the Final Office Action mailed November 1, 2005 and Notice of Appeal filed on December 21, 2005.

AUTHORIZATION TO DEBIT ACCOUNT

It is believed that no extensions of time or fees are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. § 1.136(a), and any fees required (including fees for net addition of claims) are hereby authorized to be charged to Hewlett-Packard Development Company's deposit account no. 08-2025.

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Application No. 09/517,366
Appeal Brief

I. REAL PARTY IN INTEREST

The real party-in-interest is the assignee, Hewlett-Packard Company, a Delaware corporation, having its principal place of business in Palo Alto, California.

II. RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences known to appellant, the appellant's legal representative, or assignee that will directly affect or be directly affected by or have a bearing on the Appeal Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 1 - 20 and 31 - 37 are allowed, and claims 21 - 30 and 38 - 40 stand finally rejected. The rejection of claims 21 - 30 and 38 - 40 is appealed. Claims 1 - 20 and 31 - 37 are not appealed since these claims are allowed.

IV. STATUS OF AMENDMENTS

No amendments were made after receipt of the Final Office Action. All amendments have been entered.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The following provides a concise explanation of the subject matter defined in each of the claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified by a corresponding reference to the specification and drawings where applicable. Note that the citation to passages in the specification and drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element or that these are the sole sources in the specification supporting the claim features.

Claim 21

A computer readable medium having instructions for causing a computer to execute a method, comprising (p. 4, line 23 - p. 6, line 11):

Application No. 09/517,366
- Appeal Brief

operating a software process (FIG. 1: 106, 108) on a computer (FIG. 1: 101), said software process including a plurality of attributes (FIG. 1: 112, 114; p. 6, line 12 – p. 7, line 21);

executing an operating system kernel (FIG. 1: 127) in communication with said software process, said operating system kernel in communication with an executable file to be accessed by said software process (p. 8, line 3 – p. 8, line 14; and

modifying the plurality of attributes for the software process based on an executable environment attribute (FIG. 1: 225) stored in association with the executable file, such that when said executable file is executed, a new software process attribute is set as a function of the executable environment attribute (p. 12, line 1 – p. 12, line 14; p. 14, line 22 – p. 15, line 24).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 21-30 and 38-40 are rejected under 35 USC § 101 as being directed to non-statutory subject matter.

Application No. 09/517,366
Appeal Brief

VII. ARGUMENT

The rejection of claims 21 – 30 and 38 – 40 is improper, and Applicants respectfully requests withdraw of this rejection.

Claim Rejections: 35 USC § 101

Claims 21 – 30 and 38 – 40 are rejected under 35 USC § 101 as being directed to non-statutory subject matter. Thus, the sole issue on appeal is whether claims 21 – 30 and 38 – 40 are directed to patentable subject matter under 35 USC § 101.

Overview of Issues

Claims 21-30 and 38-40 recite the following preamble: "A computer readable medium having instructions for causing a computer to execute a method, comprising." In the specification, Applicants provide a lengthy description and examples of various "computer-readable medium." These examples include various media, such as electronic, magnetic, optical, ROM, RAM, etc. The specification also states:

Note that the computer-readable medium could even be paper of another suitable medium upon which the program is printed, as the program can be electronically captured, via for instance optical scanning of the paper or other medium, then compiled, interpreted or otherwise processed in a suitable manner if necessary, and then stored in a computer memory. (Specification at page 6, lines 7-11).

The Examiner rejects these claims as being non-statutory under 35 USC § 101. Specifically, the Examiner cites several cases related to printed matter and states: "Printed matter which fails to be functionally interrelated to its substrate has long been held to be nonstatutory" (FOA at p. 3).

Application No. 09/517,366
Appeal Brief

Examiner's Rejection Contrary to Case Law

The rejection of the Examiner directly conflicts with current case law that is precedent in this matter. The Federal Circuit has held that the printed matter cases have no relevance where, as here, the claims recite information readable by a machine. For instance, the Federal Circuit decision in *In Re Lowry* explicitly rejected the notion that printed matter rejections apply to computer readable media:

The printed matter cases "dealt with claims defining as the invention certain novel arrangements of printed lines or characters, useful and intelligible only to the human mind." *In re Bernhart*, 417 F.2d 1395, 1399, 163 USPO 611, 615 (CCPA 1969). The printed matter cases have no factual relevance where "the invention as defined by the claims *requires* that the information be processed not by the mind but by a machine, the computer." *Id.* (Emphasis in original: *In Re Lowry*, 32 F.3d 1579, 1583 (Fed. Cir. 1994)).

As yet another example, the Federal Circuit decision in *In re Beauregard* expressly stated that the printed matter doctrine does not apply to computer program product claims (see *In re Beauregard*, 53 F.3d 1583 (Fed. Cir. 1995)). In order to advance prosecution, Applicants even amended the rejected claims to emulate the preamble expressly allowed in *In re Beauregard*. In other words, claims 21-30 and 38-40 were amended to recite the preamble expressly allowed in *In re Beauregard*. Despite this amendment, the Examiner has refused to withdraw the rejection under 35 USC § 101.

Thus, the Federal Circuit has expressly held that the printed matter cases have no relevance here (*In re Lowry* at 1583). More specifically, claims 21-30 and 38-40 require that information is processed, not by the mind, but by a machine. In fact, the body of independent claim 21 even recites computer elements such as "operating a software process on a computer" and "executing an operating system kernel in communication with the software process."

Application No. 09/517,366
Appeal Brief

In light of the legal precedent in the Federal Circuit, Applicants respectfully ask the Board of Appeals to reverse the rejection of claims 21-30 and 38-40.

Response to Examiner's Case Law Citations

The Examiner cites several cases in an attempt to support his position that the printed matter cases apply to the computer readable medium of claims 21-30 and 38-40. Applicants disagree with the Examiner's interpretation of these cases. In fact, Applicants argue that these cases actually support patentability of computer readable medium claims.

As one example, the Examiner cites *In re Jones*. This decision supports the position of the Applicants. In this case, the court stated:

We think it is error to confuse the lines on a patent drawing, which may have the appearance of "printed matter," with functional elements of a mechanism which in use actuate other mechanism or electrical circuits or devices intended to be illustrated by the drawing. (*In re Jones*, 373 F. 2d 1007, at 1013).

As noted above, the body of independent claim 21 recites numerous elements for performing operations on a computer ("operating a software process on a computer" and "executing an operating system kernel in communication with the software process" etc.). Further yet, the portion of the specification that mentions a computer-readable medium as being paper even expressly states that the printed program performs operations on a computer:

[T]he computer-readable medium could even be paper of another suitable medium upon which the program is printed, as the program can be electronically captured, via for instance optical scanning of the paper or other medium, then compiled, interpreted or otherwise processed in a suitable manner if

Application No. 09/517,366
Appel Brief

necessary, and then stored in a computer memory. (Emphasis added).

Thus, the CCPA decision in *In Re Jones* cited by the Examiner does not support the rejection. Rather, *Jones* is consistent with the Federal Circuit's holding in *Lowry* that computer readable printed paper as recited in the rejected claims is not subject to a printed matter rejection.

Rejected Claims Meet Criteria of § 101

Under 35 USC § 101, patentable subject matter must have two basic criteria. First, the subject matter must be one of processes, machines, manufacturers, and compositions of matter. Generally, three categories are not included as patentable subject matter: (1) abstract ideas, (2) laws of nature, and (3) natural phenomena. Second, the subject matter to be patented must be "useful." Applicants' claimed subject matter meets both of these criteria.

First, as noted above, the Federal Circuit has clearly held that computer readable medium are statutory subject matter according to 35 USC § 101 (see *Lowry*). Second, the Examiner has made no argument whatsoever that claims 21-30 and 38-40 are not useful within the meaning of 35 USC § 101. Nonetheless, Applicants will show that claims 21-30 and 38-40 are "useful" according to 35 USC § 101.

Claim 21

Independent claim 21 has a practical application in the technological arts since the claim produces a concrete, tangible, and useful result. In other words, the claim recites at least one step or one act that produces something that is concrete, tangible, and useful. By way of illustration only, claim 21 recites (emphasis added):

modifying the plurality of attributes for the software process
based on an executable environment attribute stored in association
with the executable file, such that when said executable file is

Application No. 09/517,366
Appeal Brief

executed, a new software process attribute is set as a function of the executable environment attribute.

Thus, claim 21 recites that plural attributes are modified such that a new attribute is set as a function of the executable environment attribute. In other words, the claim recites a concrete, tangible, and useful result for modifying plural attributes for a software process. The act of such modification provides a concrete, tangible, and useful result.

Law Supports Applicants' Position

The legal position of the Applicants is clearly supported in MPEP 2106 and case law (see *AT&T Corp. v. Excel Communications*, 172 F.3d 1352 at 1358 (Fed. Cir. 1999)). The law clearly states: "Only when the claim is devoid of any limitation to a practical application in the technological arts should it be rejected under 35 USC 101" (MPEP 2106: Emphasis added). Applicants have shown that independent claim 21 is not devoid of a limitation to a practical application in the technological arts.

Next, Applicants respectfully cite MPEP 2106 to support further their position:

The applicant is in the best position to explain why an invention is believed useful. Office personnel should therefore focus their efforts on pointing out statements made in the specification that identify all practical applications for the invention. Office personnel should rely on such statements throughout the examination when assessing the invention for compliance with all statutory criteria. An applicant may assert more than one practical application, but **only one is necessary to satisfy the utility requirement**. Office personnel should review the entire disclosure to determine the features necessary to accomplish at least one asserted practical application. (Bold added).

Application No. 09/517,366
Appeal Brief

For at least these reasons, Appellants respectfully ask the Appeal Board to withdraw the rejection under 35 USC § 101.

Specification Supports Usefulness of Claims

Applicants' specification further supports the usefulness of the claims. By way of example, the Background discusses the following problem:

In many cases, a number of different programs execute in processes that have been assigned identical sets of attributes. In these cases, the kernel is unable to apply different access control criteria to the different processes, and a process may thus be vulnerable to various flaws that can cause it to corrupt data or resources belonging to another process. (Applicants' specification p. 2, line 24 – p. 3, line 3).

Applicants' specification further discusses the following:

By attaching execution environment attribute sets to various executable program files, the administrator can easily control the credentials and capabilities under which the various programs operate, irrespective of the identify of the invoking user. (Applicants' specification p. 15, lines 3-6).

As noted above, claim 21 recites that plural attributes are modified such that a new attribute is set as a function of the executable environment attribute. Modification of attributes is clearly useful under 35 USC § 101.

Conclusion

In short, claims 21-30 and 38-40 meet the requirements of 35 USC § 101. The Office Action contends that since Applicants' specification states that a computer readable medium includes a piece of paper, claims 21-30 and 38-40 are directed to non-

Application No. 09/517,366
Appeal Brief

statutory subject matter. This argument is improper. The Examiner is not properly applying the law of 35 USC § 101. Further, Applicants respectfully argue that the Examiner is not following the U.S. Patent and Trademark Office's own guidelines for software cases (see, *Examination Guidelines for Computer-Related Inventions*). The Examiner has not followed these guidelines in rejecting the claims under Section 101.

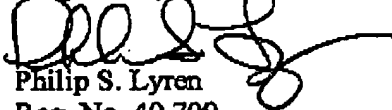
Application No. 09/517,366
Appeal Brief

In view of the above, Applicants respectfully request the Board of Appeals to reverse the Examiner's rejection of claims 21 - 30 and 38 - 40.

Any inquiry regarding this Amendment and Response should be directed to Philip S. Lyren at Telephone No. (281) 514-8236, Facsimile No. (281) 514-8332. In addition, all correspondence should continue to be directed to the following address:

Hewlett-Packard Company
Intellectual Property Administration
P.O. Box 272400
Fort Collins, Colorado 80527-2400

Respectfully submitted,



Philip S. Lyren
Reg. No. 40,709
Ph: 281-514-8236

CERTIFICATE UNDER 37 C.F.R. 1.8

The undersigned hereby certifies that this paper or papers, as described herein, is being transmitted to the United States Patent and Trademark Office facsimile number 571-273-8300 on this 27th day of February, 2006.

By 
Name: Carrie McKerley

Application No. 09/517,366
Appeal Brief

VIII. Claims Appendix

1. A system for establishing a secure execution environment for a software process executed by a program operating on a computer, comprising:
a software process operating on a computer, said software process including a plurality of attributes;
an operating system kernel in communication with said software process and in communication with an executable file to be accessed by said software process; and
a system call trap associated with said operating system kernel, said system call trap configured to modify the plurality of attributes for the software process in said operating system kernel based on an executable environment attribute stored in association with said executable file, such that when said executable file is executed, a new software process attribute is set as a function of the executable environment attribute.
2. The system of claim 1, wherein said system call trap further comprises:
a process attribute extension; and
an access token extension associated with said process attribute extension, said access token extension including said executable environment attribute.
3. The system of claim 1, wherein said executable environment attribute is contained in a database associated with said executable file.
4. The system of claim 1, wherein said executable environment attribute is chosen from the group consisting of user ID, group IDs and privileges.
5. The system of claim 1, wherein said execution environment attribute isolates said software process from any other software process operating on said computer.
6. The system of claim 1, wherein said software process is a web server process.

Application No. 09/517,366
Appeal Brief

7. The system of claim 1, wherein said software process is a file transfer process.
8. The system of claim 1, wherein said software process is a mail server process.
9. The system of claim 1, wherein said executable environment attribute is associated to said software process upon execution of said software process.
10. The system of claim 1, wherein said executable environment attribute replaces any existing attributes associated with said software process.
11. A method for establishing a secure execution environment for a software process executed by a program operating on a computer, the method comprising:
 - operating a software process on a computer, said software process including a plurality of attributes;
 - executing an operating system kernel in communication with said software process, said operating system kernel in communication with an executable file to be accessed by said software process; and
 - modifying the plurality of attributes for the software process based on an executable environment attribute stored in association with the executable file, such that when said executable file is executed, a new software process attribute is set as a function of the executable environment attribute.
12. The method of claim 11, further comprising:
 - executing a process attribute extension; and
 - executing an access token extension associated with said process attribute extension, said access token extension including the executable environment attribute.
13. The method of claim 11, wherein the executable environment attribute is contained in a database associated with said executable file.

Application No. 09/517,366
Appeal Brief

14. The method of claim 11, wherein said the executable environment attribute is chosen from the group consisting of user ID, group IDs and privileges.

15. The method of claim 11, wherein said execution environment attribute isolates said software process from any other software process operating on said computer.

16. The method of claim 11, wherein said software process is a web server process.

17. The method of claim 11, wherein said software process is a file transfer process.

18. The method of claim 11, wherein said software process is a mail server process.

19. The method of claim 11, wherein the executable environment attribute is associated to said software process upon execution of said software process.

20. The method of claim 11, wherein the executable environment attribute replaces any existing attributes associated with said software process.

21. A computer readable medium having instructions for causing a computer to execute a method; comprising:

operating a software process on a computer, said software process including a plurality of attributes;

executing an operating system kernel in communication with said software process, said operating system kernel in communication with an executable file to be accessed by said software process; and

modifying the plurality of attributes for the software process based on an executable environment attribute stored in association with the executable file, such that

Application No. 09/517,366
Appeal Brief

when said executable file is executed, a new software process attribute is set as a function of the executable environment attribute.

22. The computer readable medium of claim 21, further comprising:
executing a process attribute extension; and
executing an access token extension associated with said process attribute extension, said access token extension including the executable environment attribute.

23. The computer readable medium of claim 21, wherein the executable environment attribute is contained in a database associated with said executable file.

24. The computer readable medium of claim 21, wherein said the executable environment attribute is chosen from the group consisting of user ID, group IDs and privileges.

25. The computer readable medium of claim 21, wherein said execution environment attribute isolates said software process from any other software process operating on said computer.

26. The computer readable medium of claim 21, wherein said software process is a web server process.

27. The computer readable medium of claim 21, wherein said software process is a file transfer process.

28. The computer readable medium of claim 21, wherein said software process is a mail server process.

29. The computer readable medium of claim 21, wherein said the executable environment attribute is associated to said software process upon execution of said software process.

Application No. 09/517,366
Appeal Brief

30. The computer readable medium of claim 21, wherein the executable environment attribute replaces any existing attributes associated with said software process.

31. The system of claim 1, wherein the system call trap is further configured to determine whether the execution environment attribute contains an inherit flag.

32. The system of claim 31, wherein the system call trap is further configured to store a current attribute for a current process when the execution environment attribute contains an inherit flag.

33. The system of claim 32, wherein the system call trap is further configured to:
determine whether the current attribute for the current process contains the inherit flag;

merge the execution environment attribute with a previously stored attribute if the current attribute does not contain the inherit flag; and

merge the execution environment attribute with the current attribute if the current attribute does contain the inherit flag.

34. The method of claim 11, further comprising determining whether the execution environment attribute contains an inherit flag.

35. The method of claim 34, further comprising storing a current attribute for a current process when the execution attribute contains an inherit flag.

36. The method of claim 35, further comprising:
determining whether the current attribute for the current process contains the inherit flag; and

merging the execution environment attribute with a previously stored attribute if the current attribute does not contain the inherit flag.

Application No. 09/517,366
Appeal Brief

37. The method of claim 35, further comprising:
determining whether the current attribute for the current process contains the inherit flag; and
merging the execution environment attribute with the current attribute if the current attribute does contain the inherit flag.

38. The computer readable medium of claim 21, further comprising determining whether the execution environment attribute contains an inherit flag.

39. The computer readable medium of claim 38, further comprising storing a current attribute for a current process when the execution attribute contains an inherit flag.

40. The computer readable medium of claim 39, further comprising:
determining whether the current attribute for the current process contains the inherit flag;
merging the execution environment attribute with a previously stored attribute if the current attribute does not contain the inherit flag; and
merging the execution environment attribute with the current attribute if the current attribute does contain the inherit flag.

Application No. 09/517,366
Appeal Brief

IX. EVIDENCE APPENDIX

None.

Application No. 09/517,366
Appeal Brief

X. RELATED PROCEEDINGS APPENDIX

None.

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